

REMARKS/ARGUMENTS

Claims 1-33 are pending. Claims 1, 11-13, 18-19, 22-28 and 30 were amended. No claims have been canceled, added, or withdrawn. Accordingly, claims 1-33 remain pending. Withdrawal of the outstanding rejections to the pending claims is respectfully requested in view of the following remarks.

Claim Objection

Claim 1 has been amended to define the term “ER”. Withdrawal of the objection to claim 1 is requested.

35 USC §101 Rejections

Claims 11-33 stand rejected under 35 USC §101 because the claimed invention is directed to non-statutory subject matter. The Action indicates that to overcome this rejection, the preamble of the claims should be rewritten as “*a computer readable medium encoded with a computer program including computer executable instructions for representing sequential motion patterns....*” Regarding **claims 11-29**, claims 11-13, 18-19, and 22-28 have been amended to reflect the suggested language. Additionally, **claims 12, 21 and 22-33** are directed to “a computing device”, which is an article of manufacture. Articles of manufacture are already statutory subject matter under 35 USC §101.

In view of these claim amendments, and because “a computing device” is statutory subject matter, withdrawal of the 35 USC §101 rejection of claims 11-33 is respectively requested.

35 USC §102(b) Rejections

Claims 1, 2, 4, 5, 7-15, 17-21, 30, 32 and 33 stand rejected under 35 USC §102(b) as being anticipated by US patent application serial number 6,101,276 to *Adiletta et al* ("Adiletta"). However, the Manual of Patent Examining Procedure (M.P.E.P.) states that a claim is anticipated by a reference **only** if each and every element as set forth in the claim can be found in the reference and, furthermore, that the **identical** invention **must** be shown in as complete detail as is contained in the claim.

A claim is anticipated **only** if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference. ... The **identical** invention **must** be shown in as complete detail as is contained in the ... claim.

(M.P.E.P. § 2131, subsection titled "TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM", emphasis added). Each of the independent claims 1, 13, and 30 include at least one feature not described by *Adiletta*. For at least this reason, the rejections under 35 U.S.C. § 102 of the independent claims 1, 13 and 30 should be withdrawn. Examples of claim features not found in *Adiletta* are given below.

Independent claim 1 is directed to "converting video frames into a sequence of energy redistribution ("ER") measurements", and "applying one or more motion filters to the ER measurements to generate a number of temporal sequences of motion patterns, the motion patterns being in a spatio-temporal data format, the number being a function of how many motion filters were applied to the ER measurements". Although *Adiletta*, describes computing AC and DC energies from motion vectors (MVs) to characterize an amount of change between a reference frame and a current frame (col. 13, lines 9-16), this does not describe

“converting video frames into a sequence of energy redistribution (“ER”) measurements” (emphasis added), as claim 1 requires.

Instead, *Adiletta* describes computing AC and DC energies from motion vectors (MVs) **to determine a number of bits to allocate** for frame compression operations. Specifically, “[t]his energy data will be used by the CPU for the purpose of allocating bits during frame encoding”; col. 13, lines 14-16). At col. 14, lines 20-44, *Adiletta* describes that the computed energy values are used to determine “the best encoding scheme for each macroblock so that picture quality is maximized.” Specifically, “[t]he CPU determines how each macroblock is to be encoded. [...] The tradeoff as to whether to differentially code or intra-code the macroblock is based on the energy content of the macroblock. **If there is a high energy value, then** there has potentially been a large change in the image between the previous frame and the current frame, and **intra-coding would be the best choice** to capture the updated image. **If the energy value is low, then** the change between macroblocks is minimal, and **inter-coding**, (also referred to as differentially coding), **which uses the least amount of bits**, would be the optimal selection.” (Emphasis added). Computing energy values to select an optimal macroblock compression algorithm clearly does not describe, or even fairly suggest, at least for the purpose of applying the reference to independent claim 1, “converting video frames into a sequence of energy redistribution (“ER”) measurements”, as claim 1 requires. Therefore, for at least this reason, *Adiletta* fails to disclose each and every element of independent claim 1 in as complete detail as required by the claim to support an anticipation rejection.

Additionally, claim 1 recites “applying one or more motion filters to the ER measurements to generate a number of temporal sequences of motion patterns, the

motion patterns being in a spatio-temporal data format, the number being a function of how many motion filters were applied to the ER measurements". The Action asserts that these features are described by *Adiletta* by Figs. 7 and 8, because "the frame's energy data, i.e. DC and AC components of DCT, are filtered as texture, edge or smoothness." Applicant disagrees. As already indicated, *Adiletta* at col. 13, lines 14-16, plainly describes, "**[t]his energy data will be used by the CPU for the purpose of allocating bits** during frame encoding" (emphasis added). Clearly, using energy values to determine a number of bit to allocate for compression does not describe using computed energy values to "generate a number of temporal sequences of motion patterns", as claim 1 requires.

Adiletta's disclosure that energy values are used to determine numbers of bits to allocate is not changed by cited Figs. 7 and 8, nor is it changed by *Adiletta's* description of these figures. Rather, *Adiletta's* description associated with these cited figures is also directed to using energy values to determine an optimal number of bits to allocate for macroblock compression. *Adiletta* explicitly describes at col. 4, lines 11-15: "FIG. 7 is a block diagram of the process used to determine the perceptual visual weight ["PVW"] of an I-coded frame or macroblock", and "FIG. 8 is a diagram of the process used to determine the visual classification of a macroblock." *Adiletta* describes at col. 16, line 38 through col. 17, line 5, that "**[o]nce the PVW value for each macroblock is determined, bit allocation may be done in an intelligent manner.** The portion of *Adiletta's* disclosure for this determination is reproduced below, for convenience.

"The PVW weighting process is based on the calculation of one of three picture statistics. As will be discussed in more detail below, the statistics chosen are based on the frame type being analyzed. The first statistic calculated is the weighted mean absolute difference of pixel data within a macroblock. The mean absolute difference statistic S₁ at pixel location (m,n) of a macroblock is calculated according to equation 5A given below [...] and represents the mean pixel value of a local pixel region [...]"

The S₁ statistic proves a measure of how smooth the pixel surface is or how complex the local region is. Large values for S₁ may indicate the presence of an edge or texture region within the macroblock.

Once the S₁ values are calculated for each macroblock in a frame, further processing using these values is performed in order to compute the PVW of the macroblock. It should be noted that the use of S₁ alone in calculating the PVW is only valid for I-frames since the S₁ statistic does not provide any temporal component." (Emphasis added).

Accordingly, *Adiletta's* description at col. 17, lines 7 through 24 regarding Fig. 7 describes that the PVW process for an I-frame includes mapping mean, median, and variance for S₁ ("a measure of how smooth the pixel is or how complex the local region is" – col. 16, lines 62-63) as related to an initial PVW value for each macroblock. *Adiletta* describes that a scalar value associated with this mapping is "**used to calculate the resource allocation (bit assignment) for that macroblock**" (col. 17, lines 15-16). Clearly this does not disclose, or even fairly suggest, "applying one or more motion filters to the ER measurements to generate a number of temporal sequences of motion patterns, the motion patterns being in a spatio-temporal data format, the number being a function of how many motion filters were applied to the ER measurements", as claim 1 requires.

Moreover, not only does *Adiletta* not describe use of "motion filters to the ER measurements", but *Adiletta* explicitly describes that the PVW calculations for

I-Frames “do not provide any temporal component”. Thus, it is plain that this cited portion of *Adiletta* cannot describe, “generate a number of temporal sequences of motion patterns”, as claim 1 requires.

Regarding Fig. 8, *Adiletta* at col. 17, lines 17-42, describes a visual classification process that uses the S_1 (smoothness/complexity) value described above to make macroblock texture and edge classification determinations. For instance:

[t]o classify a particular macroblock as a texture region, the average of the minimum two neighboring S_1 values is calculated.” Additionally, “[t]o classify a region as an edge region the minimum S_1 value of all neighboring macroblocks is determined. The S_1 value for the macroblock of interest is then divided by the minimum value. This value is then compared to a threshold value to determine if the macroblock should be classified as an edge type macroblock.” Analogously, “to classify a region as a smooth region, the S_1 value of a macroblock is compared to a threshold value defined as the maximum value which S_1 may be and still indicate a smooth region.”

In view of the above, *Adiletta* classifies macroblocks as texture, edge, or smooth regions based on a smoothness/complexity value. Plainly, this does not disclose, or even fairly suggest, “applying one or more motion filters to the ER measurements to generate a number of temporal sequences of motion patterns, the motion patterns being in a spatio-temporal data format, the number being a function of how many motion filters were applied to the ER measurements”, as claim 1 requires. For these additional reasons, *Adiletta* fails to disclose each and every element of independent claim 1 in as complete detail as required by the claim to support an anticipation rejection.

Independent claim 1 is patentable for at least the reasons presented above. Additionally, **independent claims 13 and 30** each include salient features similar to those of independent claim 1, and are therefore patentable for the same or similar reasons. Furthermore, dependent claims 2, 4, 5, 7-12, 14-15, 17-21, 32 and 33 depend from respective ones of independent claims 1, 13 and 30, and are therefore patentable at least for reasons based on their respective dependencies.

Accordingly, withdrawal of the 35 USC §102(a) rejection of claims 1-2, 4, 5, 7-15, 17-21, 30, 32 and 33 is requested.

35 USC §103 Rejections

Claims 3, 6, 16, 22-29 and 31 stand rejected under 35 USC §103(a) as being unpatentable over *Adiletta* and further in view of US patent application serial no. 6,782,135 to *Viscito et al* ("Viscito"). However, the M.P.E.P. states that, to support the rejection of a claim under 35 U.S.C. § 103(a), each feature of each rejected claim must be taught or suggested by the applied references, and that each of the words describing the feature must be taken into account.

To establish *prima facie* obviousness of a claimed invention, **all** the claim limitations **must** be taught or suggested by the prior art. ... **All** words in a claim **must** be considered in judging the patentability of that claim against the prior art.

(M.P.E.P. § 2143.03, emphasis added). Independent claims 1, 13, 22 and 30 are base claims of particular ones of dependent claims 3, 6, 16, 22-29 and 31. Each of the independent claims 1, 13, 22 and 30 includes at least one feature not taught or fairly suggested by *Adiletta*, alone or in combination with *Viscito*, and is therefore patentable for at least this reason.

In addressing **claim 22**, the Action neglected to examine each feature of the claim. For instance, clause 1 of claim 22 recites “deriving motion vector fields (MVF)s between frames of a video sequence **as a function of a sliding window comprising a configurable number of the frames**” (emphasis added). The Action has failed to examine these features. Instead, after conceding that *Adilleta* does not “disclose the term ‘motion vector fields’ and deriving motion vector fields, the Action combines *Adilleta* with *Viscito* attempting to arrive at “motion vector fields.” Specifically, the Action points to col. 16, line 3-17, where *Viscito* discloses the use of motion vector fields for temporal analysis. While claim 22 does recite the phrase “motion vector fields”, this particular phrase cannot be examined in a vacuum, but must be examined in the context that it is used in the claim. For instance, *Viscito* is completely silent on any teaching or fair suggestion of “deriving motion vector fields (MVF)s between frames of a video sequence **as a function of a sliding window comprising a configurable number of the frames**” (emphasis added), as claim 22 recites. Thus, the Action has failed to present a *prima facie* case of obviousness, as *Adilleta* and/or *Viscito* fail to teach or suggest at least this one feature of claim 22.

Withdrawal of the 35 USC §103(a) rejection of claim 22 is requested.

Claims 23-29 depend from independent claim 22 and are not obvious over the cited combination at least for reasons based on their respective dependency on this allowable base claim. Withdrawal of the 35 USC §103(a) rejection of claims 23-29 is requested.

For the reasons already discussed above, *Adilleta* does not teach or fairly suggest the features of **independent claims 1, 13 and 30**. For instance, *Adilleta* discloses computing energy values to select an optimal macroblock compression

algorithm (e.g., col. 13, lines 14-16; and col. 14, lines 20-44). This clearly does not teach, or even fairly suggest, at least for the purpose of applying the reference to independent claim 1, “converting video frames into a sequence of energy redistribution (“ER”) measurements”, as claim 1 requires. Additionally, *Adilleta* discloses using energy values to determine a number of bit to allocate for compression (e.g., col. 13, lines 14-16; col. 14, lines 20-44; and col. 16, line 38 through col. 17, line 5). Plainly, this disclosure of *Adilleta* does not teach, or fairly suggest, using computed energy values to “generate a number of temporal sequences of motion patterns”, as claim 1 requires.

Adilleta is combined with *Viscito* for the teaching of using motion vector fields for temporal analysis. However, Applicant respectfully submits that this combination fails to cure the already discussed deficiencies of the primary reference, *Adilleta*. Instead, the combination provides for computing energy values to select an optimal macroblock compression algorithm (*Adilleta*), wherein motion vector fields are used for temporal analysis (*Viscito*). Clearly, and at least for the discussed reasons, this combination fails to teach or suggest “converting video frames into a sequence of energy redistribution (“ER”) measurements”, and “applying one or more motion filters to the ER measurements to generate a number of temporal sequences of motion patterns, the motion patterns being in a spatio-temporal data format, the number being a function of how many motion filters were applied to the ER measurements”, as claim 1 requires.

Independent claims 13 and 30 each include salient features similar to those of independent claim 1, and are therefore patentable for the same or similar reasons. Furthermore, dependent claims 3, 6, 16 and 31 depend from respective

ones of independent claims 1, 13 and 30, and are therefore patentable at least for reasons based on their respective dependencies on an allowable base claim.

Accordingly, withdrawal of the 35 USC §103(a) rejection of claims 3, 16, 16, and 31 is also requested.

Conclusion

Pending claims 1-33 are in condition for allowance and action to that end is urgently requested. Should any issue remain that prevents allowance of the application, the Examiner is encouraged to contact the undersigned prior or issuance of a subsequent action.

Respectfully Submitted,

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